

# VAOT EARTH RETAINING SYSTEM SELECTION CHART

## GENERAL CLASSIFICATION

## APPROVED SYSTEMS

## COMMENTS

### **A. FILL WALLS** <sup>(1,2)</sup>

1. Rigid Gravity and Semi-Gravity Walls



Cast-in-place (CIP)  
Concrete Gravity Wall

- 10 ft. max. height
- Settlement sensitive
- May require deep foundation



CIP Concrete Cantilever/  
Counterfort Wall

- Settlement sensitive
- 30 ft. max. height (cantilever)
- 60 ft. max. height (counterfort)
- May require deep foundation

2. Prefabricated Modular Gravity Walls



Modular Crib/Bin Wall

- Doublewal<sup>®</sup>
- Stawal<sup>®</sup>
- Timber (VAOT)
- Contech<sup>®</sup>
- T-Wall<sup>®</sup>
- Redi-Rock<sup>™</sup> \*
- Recon<sup>™</sup>
- Gabion\*\*

General

- 35 ft. max. height (except as noted)
- Some systems not settlement tolerant

- \*8 ft. max. height (without geogrid reinforcement)

- \*\*25 ft. max. height
- \*\*Labor intensive
- \*\*Abrasion susceptible
- \*\*Need good stone source
- \*\*Wire baskets subject to corrosion
- \*\*Settlement tolerant

-Contech Precast Anchored  
Wingwall System\*\*\*

- \*\*\*Approved only for use with  
Contech Con/Span<sup>®</sup> Bridge Systems

3. Mechanically Stabilized Earth (MSE) Walls



Segmental, Precast Facing  
MSE wall

- Reinforced Earth<sup>®</sup>
- Retained Earth<sup>™</sup>
- Tricon<sup>™</sup> (under eval.)

- 65 ft. max. height
- Backfill must meet electrochemical requirements
- May Interfere w/underground utilities
- Scour susceptible
- Minimum base width = 0.7H
- Settlement tolerant



Geotextile/Geogrid/Welded  
Wire Facing MSE Wall

- Tailed Gabions
- Redi-Rock<sup>™</sup>  
with geogrids

- See Gabions
- Also suited for temporary conditions

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### ***B. CUT WALLS*** <sup>(3)</sup>

1. Non-Gravity Cantilevered Walls	<p>➔ Sheet Pile Wall</p> <p>➔ Soldier Pile and Lagging Wall</p>	<ul style="list-style-type: none"> <li>•15 ft max. height</li> <li>•Hard to drive in, dense gravel/ boulders</li> <li>•Vibration during driving</li> <li>•Large lateral movements possible</li> </ul>
2. Anchored Walls	<p>➔ Ground anchor (tieback)</p> <p>-Sheet Pile Wall</p> <p>-Soldier Pile and Lagging Wall</p> <p>➔ Deadman anchor</p> <p>-Sheet Pile Wall</p> <p>-Soldier Pile and Lagging Wall</p>	<ul style="list-style-type: none"> <li>•65 ft. max. height</li> <li>•Requires specialized equipment</li> <li>•Underground easement required for anchors</li> <li>•Difficult to develop anchor capacity in loose silts and soft clays</li> <li>•Requires corrosion protection</li> </ul>
3. In-situ Reinforced Walls	<p>➔ Soil-Nailed Wall</p>	<ul style="list-style-type: none"> <li>•Soil must be self supporting for height of 5 ft.</li> <li>•Nails require underground easements</li> <li>•Not appropriate in loose silts and soft clays</li> <li>•Permanent dewatering required</li> <li>•Suited in areas with limited head space.</li> <li>•Wall embedment not required</li> </ul>

#### Notes:

1. Fill Wall construction refers to wall systems that are constructed from the base of the wall to the top (bottom-up construction).

2. Designers should consider Reinforced Soil Slopes (RSS) in applications where steepened slopes (1 on 1) may be an appropriate alternative to a wall.

3. Cut Wall construction refers to wall systems that are constructed from the top of the wall to the base (top-down construction).

Revised: August 1, 2012